

THERE IS CLAIMED:

1. A method of fabricating an optical fiber with microstructures, which method includes the steps of producing a plurality of capillary tubes by shrinking and drawing tubes, assembling capillary tubes around a central rod to form a bundle disposed in a preform, and drawing said bundle to form said fiber, and further includes a step of producing inside said capillary tubes a self-cleaning layer including molecules able to react with hydroxyl molecules to produce volatile gaseous substances.
2. The method claimed in claim 1 wherein said self-cleaning layer is produced on the interior surface of said capillary tubes after the fabrication of said tubes.
3. The method claimed in claim 2 wherein said self-cleaning layer is deposited by a vapor phase chemical deposition technique such as Modified Chemical Vapor Deposition (MCVD), Plasma Chemical Vapor Deposition (PCVD), or Surface Plasma wave Chemical Vapor Deposition (SPCVD).
4. The method claimed in claim 2 wherein said self-cleaning layer is produced by a sol-gel technique.
5. The method claimed in claim 1 wherein said self-cleaning layer is produced during the fabrication of said capillary tubes.
6. The method claimed in claim 5 wherein said self-cleaning layer is produced by an evaporation and densification technique such as Outside Vapor Deposition (OVD) or Vapor Axial Deposition (VAD).
7. The method claimed in claim 5 wherein said self-cleaning layer is produced by a sol-gel technique.
8. The method claimed in claim 1 wherein said self-cleaning layer is produced from gaseous precursors including at least atoms of chlorine and/or fluorine.
9. An optical fiber with microstructures comprising a plurality of capillary tubes disposed around a central rod and including a self-cleaning layer including molecules able to react with hydroxyl molecules to produce volatile gaseous substances.
10. The optical fiber claimed in claim 9 wherein said self-cleaning layer includes at least atoms of chlorine and/or fluorine.

11. The optical fiber claimed in claim 9 wherein said self-cleaning layer is disposed on the interior surface of said capillary tubes.
12. The optical fiber claimed in claim 9 wherein said self-cleaning layer is incorporated into the material of said capillary tubes.
13. The optical fiber claimed in claim 9 wherein said self-cleaning layer is from 50  $\mu\text{m}$  to 3 mm thick.
14. The optical fiber claimed in claim 9 wherein said central rod is made of pure or doped silica.
15. The optical fiber claimed in claim 9 wherein said capillary tubes are made of pure or doped silica.